

SEQUENCE LISTING

<110> ARAP, WADIH
KOLONIN, MIKHAIL
MINTZ, PAUL J.
PASQUALINI, RENATA
ZURITA, AMADO J.

<120> COMPOSITIONS AND METHODS OF USE OF TARGETING PEPTIDES
FOR DIAGNOSIS AND THERAPY OF HUMAN CANCER

<130> UTSC:857US

<140> 10/530,168

<141> 2005-04-04

<150> PCT/US02/27836

<151> 2002-08-30

<150> PCT/US01/27692

<151> 2001-09-07

<150> PCT/US01/28044

<151> 2001-09-07

<160> 132

<170> PatentIn Ver. 2.1

<210> 1

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 1

Lys Leu Ala Lys Leu Ala Lys Lys Leu Ala Lys Leu Ala Lys
1 5 10

<210> 2

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 2

Lys Leu Ala Lys Lys Leu Ala Lys Leu Ala Lys Lys Leu Ala
1 5 10

<210> 3
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 3
Lys Ala Ala Lys Lys Ala Ala Lys Ala Ala Lys Lys Ala Ala
1 5 10

<210> 4
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 4
Lys Leu Gly Lys Lys Leu Gly Lys Leu Gly Lys Lys Leu Gly Lys Leu
1 5 10 15

Gly Lys Lys Leu Gly
20

<210> 5
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 5
Gly Arg Arg Ala Gly Gly Ser
1 5

<210> 6
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 6
Thr Arg Arg Ala Gly Gly Gly
1 5

<210> 7
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 7
Ser Arg Ala Gly Gly Leu Gly
1 5

<210> 8
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 8
Ser Tyr Ala Gly Gly Leu Gly
1 5

<210> 9
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 9
Asp Val Ala Gly Gly Leu Gly
1 5

<210> 10
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 10
Gly Ala Gly Gly Leu Gly Ala
1 5

<210> 11
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 11
Gly Ala Gly Gly Trp Gly Val
1 5

<210> 12
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 12
Ala Gly Gly Thr Phe Lys Pro
1 5

<210> 13
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 13
Leu Gly Glu Val Ala Gly Gly
1 5

<210> 14
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 14
Gly Ser Asn Asp Ala Gly Gly
1 5

<210> 15
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 15
Tyr Arg Gly Ile Ala Gly Gly
1 5

<210> 16
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 16
Ala Gly Gly Val Ala Gly Gly
1 5

<210> 17
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 17
Gly Gly Leu Ala Gly Gly Phe
1 5

<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 18
Leu Leu Ala Gly Gly Val Leu
1 5

<210> 19

<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 19
Leu Val Val Ser Ala Gly Gly
1 5

<210> 20
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 20
Arg Thr Gln Ala Gly Gly Val
1 5

<210> 21
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 21
Ala Gly Gly Phe Gly Glu Gln
1 5

<210> 22
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 22
Ala Gly Gly Leu Ile Asp Val
1 5

<210> 23
<211> 7

<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 23

Ala Gly Gly Ser Thr Trp Thr
1 5

<210> 24

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 24

Ala Gly Gly Asp Trp Trp Trp
1 5

<210> 25

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 25

Ala Gly Gly Gly Leu Leu Met
1 5

<210> 26

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 26

Val Ala Ala Gly Gly Gly Leu
1 5

<210> 27

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 27

Leu Tyr Gly Ala Gly Gly Ser
1 5

<210> 28

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 28

Cys Ala Leu Ala Gly Gly Cys
1 5

<210> 29

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 29

Ile Gly Ala Gly Gly Val His
1 5

<210> 30

<211> 3

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 30

Ala Gly Gly
1

<210> 31

<211> 3

<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 31
Glu Gly Arg
1

<210> 32
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 32
Gly Glu Arg
1

<210> 33
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 33
Gly Val Leu
1

<210> 34
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 34
Arg Arg Ala Gly Gly Ser
1 5

<210> 35
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 35
Arg Arg Ala Gly Gly
1 5

<210> 36
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 36
His Gly Gly Val Gly
1 5

<210> 37
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 37
Cys Gly Arg Arg Ala Gly Gly Ser Cys
1 5

<210> 38
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 38
Cys Arg Val Asp Phe Ser Lys Gly Cys
1 5

<210> 39
<211> 8
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 39

Cys Asn Val Ser Asp Lys Ser Cys
1 5

<210> 40

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 40

Cys His Gln Lys Pro Trp Glu Cys
1 5

<210> 41

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 41

Cys Lys Asp Arg Phe Glu Arg Cys
1 5

<210> 42

<211> 654

<212> PRT

<213> Homo sapiens

<400> 42

Met Lys Leu Ser Leu Val Ala Ala Met Leu Leu Leu Leu Ser Ala Ala
1 5 10 15

Arg Ala Glu Glu Glu Asp Lys Lys Glu Asp Val Gly Thr Val Val Gly
20 25 30

Ile Asp Leu Gly Thr Thr Tyr Ser Cys Val Gly Val Phe Lys Asn Gly
35 40 45

Arg Val Glu Ile Ile Ala Asn Asp Gln Gly Asn Arg Ile Thr Pro Ser
50 55 60

Tyr Val Ala Phe Thr Pro Glu Gly Glu Arg Leu Ile Gly Asp Ala Ala
65 70 75 80

Lys	Asn	Gln	Leu	Thr	Ser	Asn	Pro	Glu	Asn	Thr	Val	Phe	Asp	Ala	Lys
85															
Arg	Leu	Ile	Gly	Arg	Thr	Trp	Asn	Asp	Pro	Ser	Val	Gln	Gln	Asp	Ile
100															
Lys	Phe	Leu	Pro	Phe	Lys	Val	Val	Glu	Lys	Lys	Thr	Lys	Pro	Tyr	Ile
115															
Gln	Val	Asp	Ile	Gly	Gly	Gly	Gln	Thr	Lys	Thr	Phe	Ala	Pro	Glu	Glu
130															
Ile	Ser	Ala	Met	Val	Leu	Thr	Lys	Met	Lys	Glu	Thr	Ala	Glu	Ala	Tyr
145															
Leu	Gly	Lys	Lys	Val	Thr	His	Ala	Val	Val	Thr	Val	Pro	Ala	Tyr	Phe
165															
Asn	Asp	Ala	Gln	Arg	Gln	Ala	Thr	Lys	Asp	Ala	Gly	Thr	Ile	Ala	Gly
180															
Leu	Asn	Val	Met	Arg	Ile	Ile	Asn	Glu	Pro	Thr	Ala	Ala	Ala	Ile	Ala
195															
Tyr	Gly	Leu	Asp	Lys	Arg	Glu	Gly	Glu	Lys	Asn	Ile	Leu	Val	Phe	Asp
210															
Leu	Gly	Gly	Gly	Thr	Phe	Asp	Val	Ser	Leu	Leu	Thr	Ile	Asp	Asn	Gly
225															
Val	Phe	Glu	Val	Val	Ala	Thr	Asn	Gly	Asp	Thr	His	Leu	Gly	Gly	Glu
245															
Asp	Phe	Asp	Gln	Arg	Val	Met	Glu	His	Phe	Ile	Lys	Leu	Tyr	Lys	Lys
260															
Lys	Thr	Gly	Lys	Asp	Val	Arg	Lys	Asp	Asn	Arg	Ala	Val	Gln	Lys	Leu
275															
Arg	Arg	Glu	Val	Glu	Lys	Ala	Lys	Arg	Ala	Leu	Ser	Ser	Gln	His	Gln
290															
Ala	Arg	Ile	Glu	Ile	Glu	Ser	Phe	Tyr	Glu	Gly	Glu	Asp	Phe	Ser	Glu
305															
Thr	Leu	Thr	Arg	Ala	Lys	Phe	Glu	Glu	Leu	Asn	Met	Asp	Leu	Phe	Arg
325															
Ser	Thr	Met	Lys	Pro	Val	Gln	Lys	Val	Leu	Glu	Asp	Ser	Asp	Leu	Lys
340															
Lys	Ser	Asp	Ile	Asp	Glu	Ile	Val	Leu	Val	Gly	Gly	Ser	Thr	Arg	Ile
355															
Pro	Lys	Ile	Gln	Gln	Leu	Val	Lys	Glu	Phe	Phe	Asn	Gly	Lys	Glu	Pro
375															
90															
95															

Ser Arg Gly Ile Asn Pro Asp Glu Ala Val Ala Tyr Gly Ala Ala Val
 385 390 395 400
 Gln Ala Gly Val Leu Ser Gly Asp Gln Asp Thr Gly Asp Leu Val Leu
 405 410 415
 Leu Asp Val Cys Pro Leu Thr Leu Gly Ile Glu Thr Val Gly Gly Val
 420 425 430
 Met Thr Lys Leu Ile Pro Arg Asn Thr Val Val Pro Thr Lys Lys Ser
 435 440 445
 Gln Ile Phe Ser Thr Ala Ser Asp Asn Gln Pro Thr Val Thr Ile Lys
 450 455 460
 Val Tyr Glu Gly Glu Arg Pro Leu Thr Lys Asp Asn His Leu Leu Gly
 465 470 475 480
 Thr Phe Asp Leu Thr Gly Ile Pro Pro Ala Pro Arg Gly Val Pro Gln
 485 490 495
 Ile Glu Val Thr Phe Glu Ile Asp Val Asn Gly Ile Leu Arg Val Thr
 500 505 510
 Ala Glu Asp Lys Gly Thr Gly Asn Lys Asn Lys Ile Thr Ile Thr Asn
 515 520 525
 Asp Gln Asn Arg Leu Thr Pro Glu Glu Ile Glu Arg Met Val Asn Asp
 530 535 540
 Ala Glu Lys Phe Ala Glu Glu Asp Lys Lys Leu Lys Glu Arg Ile Asp
 545 550 555 560
 Thr Arg Asn Glu Leu Glu Ser Tyr Ala Tyr Ser Leu Lys Asn Gln Ile
 565 570 575
 Gly Asp Lys Glu Lys Leu Gly Gly Lys Leu Ser Ser Glu Asp Lys Glu
 580 585 590
 Thr Met Glu Lys Ala Val Glu Glu Lys Ile Glu Trp Leu Glu Ser His
 595 600 605
 Gln Asp Ala Asp Ile Glu Asp Phe Lys Ala Lys Lys Lys Glu Leu Glu
 610 615 620
 Glu Ile Val Gln Pro Ile Ile Ser Lys Leu Tyr Gly Ser Ala Gly Pro
 625 630 635 640
 Pro Pro Thr Gly Glu Glu Asp Thr Ala Glu Lys Asp Glu Leu
 645 650

<210> 43

<211> 8

<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 43
Cys Asn Trp Thr Asp Lys Thr Cys
1 5

<210> 44
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 44
Cys Asn Ile Thr Gln Lys Ser Cys
1 5

<210> 45
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 45
Cys Asn Lys Thr Asp Lys Gly Cys
1 5

<210> 46
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 46
Cys Thr Phe Ala Gly Ser Ser Cys
1 5

<210> 47
<211> 8
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 47

Cys Asn Ser Ala Phe Ala Gly Cys
1 5

<210> 48

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 48

Cys Ser Tyr Thr Phe Ala Gly Cys
1 5

<210> 49

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 49

Cys Ser Thr Phe Ala Gly Ser Cys
1 5

<210> 50

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 50

Cys Arg Asp Gly Tyr His His Cys
1 5

<210> 51

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 51

Cys Ser Ala Ser Asp Leu Ser Cys

1

5

<210> 52

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 52

Cys Gln Asn Gln Tyr Pro Glu Cys

1

5

<210> 53

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 53

Cys Arg Ala Ser Ala Met Val Cys

1

5

<210> 54

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 54

Cys Ile Asp Met Thr His Gln Cys

1

5

<210> 55

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 55
Cys Ile Ser Ser Pro Ser Asn Cys
1 5

<210> 56
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 56
Cys Asn Gln Ser Met Trp Ser Cys
1 5

<210> 57
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 57
Cys Gln Phe Glu Asn Gly Thr Cys
1 5

<210> 58
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 58
Cys Ala Val Lys Ser Val Thr Cys
1 5

<210> 59
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 59
Cys Asn Gly Phe Met Gly Tyr Cys
1 5

<210> 60
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 60
Cys Leu Thr Ser Glu Asn Ala Cys
1 5

<210> 61
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 61
Cys Arg Ala Ser Ala Met Val Cys
1 5

<210> 62
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 62
Cys Ser Lys Lys Phe Val Thr Cys
1 5

<210> 63
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 63

Cys Lys Asn Lys His Thr Thr Cys
1 5

<210> 64
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 64
Cys Phe Glu Thr Phe Ala Gly Cys
1 5

<210> 65
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 65
Cys Asn Asn Met Tyr Ala Gly Cys
1 5

<210> 66
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 66
Cys Phe Pro Lys Arg Val Thr Cys
1 5

<210> 67
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 67
Cys Pro Arg Ser Ala Lys Asn Cys

1

5

<210> 68

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 68

Cys Gly Phe Glu Cys Val Arg Gln Cys Pro Glu Arg Cys

1

5

10

<210> 69

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 69

Cys Thr Thr His Trp Gly Phe Thr Leu Cys

1

5

10

<210> 70

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 70

Cys Asp Cys Arg Gly Asp Cys Phe Cys

1

5

<210> 71

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 71

Cys Ala Arg Ala Cys

1

5

<210> 72
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 72
Thr Arg Asn Thr Gly Asn Ile
1 5

<210> 73
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 73
Phe Asp Gly Gln Asp Arg Ser
1 5

<210> 74
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 74
Trp Gly Pro Lys Arg Leu
1 5

<210> 75
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 75
Trp Gly Glu Ser Arg Leu
1 5

<210> 76
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 76
Val Met Gly Ser Val Thr Gly
1 5

<210> 77
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 77
Lys Gly Gly Arg Ala Lys Asp
1 5

<210> 78
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 78
Arg Gly Glu Val Leu Trp Ser
1 5

<210> 79
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 79
Thr Arg Glu Val His Arg Ser
1 5

<210> 80
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 80
His Gly Gln Gly Val Arg Pro
1 5

<210> 81
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 81
Cys Lys Gly Gly Arg Ala Lys Asp Cys
1 5

<210> 82
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 82
Lys Ala Arg Gly Gly
1 5

<210> 83
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 83
Tyr Arg Cys Thr Leu Asn Ser Pro Phe Phe Trp Glu Asp Met Thr His
1 5 10 15

Glu Cys His Ala
20

<210> 84
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 84
Leu Gly Cys Met Ala Ser Met Leu Arg Glu Phe Glu Gly Ala Thr His
1 5 10 15
Ala Cys Thr Gln
20

<210> 85
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 85
Arg Gly Cys Thr Glu Ala Ala Gly Leu Val Ile Gly Ile Thr Thr His
1 5 10 15
Gln Cys Gly Asn
20

<210> 86
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 86
Ile Gly Cys Asn His Pro Ser Pro Leu Gly Ser Thr Val Val Pro Thr
1 5 10 15
Tyr Cys Phe Lys
20

<210> 87
<211> 20
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 87

Gly Thr Cys Pro Arg Gln Phe Phe His Met Gln Glu Phe Trp Pro Ser
1 5 10 15

Asp Cys Ser Arg
20

<210> 88

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 88

Asp Arg Cys Val Leu Val Arg Pro Glu Phe Gly Arg Gly Asp Ala Arg
1 5 10 15

Leu Cys His Ser
20

<210> 89

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 89

Glu Gly Cys Ser Asp Ile Met Asn Thr Ala Ala Glu Arg Val Thr Gly
1 5 10 15

Asp Cys Ser Tyr
20

<210> 90

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 90

Val Phe Cys Cys Gly Ser Tyr Cys Gly Gly Val Glu Met Leu Ala Ser
1 5 10 15

Arg Cys Gly His
20

<210> 91
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 91
Arg Glu Cys Gly Arg Thr Val His Arg Tyr Pro Trp Gly Ser Pro Glu
1 5 10 15

Ser Cys Glu Arg
20

<210> 92
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 92
Asp Ala Cys Ser Arg Phe Leu Gly Glu Arg Val Asp Ala Thr Ala Ala
1 5 10 15

Gly Cys Ser Arg
20

<210> 93
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 93
Gly Asn Cys Met Gly Leu Gln Val Ser Glu Leu Phe Met Gly Pro Tyr
1 5 10 15

Lys Cys Arg Gln
20

<210> 94
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 94
Ser Arg Cys His Ala Leu Arg Ser Gln Ser Val Ser Thr Ser Ala Gly
1 5 10 15
Ala Cys Ile Ser
20

<210> 95
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 95
Tyr Ser Cys Thr Arg Leu Asn Gly Thr Gly Leu Gln Asn Pro Pro Ser
1 5 10 15
Ala Cys Asp Arg
20

<210> 96
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 96
Trp Val Cys Thr Ser Ala Ser Gln Asp Thr Arg Leu Lys Glu Pro Gly
1 5 10 15
Met Cys Ile Ala
20

<210> 97
<211> 20
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 97

Met His Cys Thr Ser Gln Thr Leu Arg Gly Thr Pro Ser Leu Ala Pro
1 5 10 15

Lys Cys Ser Asp
20

<210> 98

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 98

Gln His Cys Val Lys Gly Gln Phe Pro Phe Arg Glu Ser Val Thr Ile
1 5 10 15

Thr Cys Asn Ser
20

<210> 99

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 99

His Thr Cys Trp Gly Ala Arg Asp Val Ala Gln Pro Ser Gly Thr Val
1 5 10 15

Arg Cys Leu Lys
20

<210> 100

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 100

Ala Arg Cys Arg Glu Asp Thr Gly Phe Met Gly Leu Gly Ser Ala Asn

1	5	10	15
---	---	----	----

Ile Cys Thr Asp
20

<210> 101
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 101
 Arg Thr Cys Glu Glu Val Arg Asn Arg Ala Leu Glu Glu Leu Thr Asn
 1 5 10 15

Phe Cys Pro Tyr
20

<210> 102
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 102
 Arg Thr Cys Gln Val Arg Ser Asn Asn Ile Ser Pro Arg Met Ala Leu
 1 5 10 15

Ala Cys Val Thr
20

<210> 103
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 103
 Arg Ser Cys Val Asn Ser Asp Thr Gly Val Leu Gln Arg Gly Ala Pro
 1 5 10 15

Ser Cys Leu Phe
20

<210> 104
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 104
Arg Gly Cys Trp Arg Asp Ser Thr Ala Trp His Val Ser Tyr Pro Val
1 5 10 15

Glu Cys Leu Ala
20

<210> 105
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 105
Asn Arg Cys Met Pro Gly Phe Leu Asp Asp Ala Asp Ser Ala Ala Ser
1 5 10 15

Pro Cys Gly Ser
20

<210> 106
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 106
Asn Gln Cys Ser Ser Leu Leu Thr Tyr Gln Gly Trp Lys Arg Thr Lys
1 5 10 15

Asp Cys Ile Pro
20

<210> 107
<211> 20
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 107

Asn Asp Cys Ser Ala His Ala Gln Pro Gly Trp Asp Glu Val Pro Pro
1 5 10 15

Met Cys Asn Gln
20

<210> 108

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 108

Asn Asn Cys Pro Val Glu Gly Ser Gln Gln Asn Tyr Ser Gly Ala Thr
1 5 10 15

Trp Cys Arg Ala
20

<210> 109

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 109

Thr Thr Cys Asn Lys Ser Met Ser Ser Gln Pro Met Arg Asp Ser Arg
1 5 10 15

Glu Cys His Arg
20

<210> 110

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 110

Thr Ser Cys Val Arg Thr Gly His Asp Glu Asn Leu Leu Lys Ala Ala
1 5 10 15

Tyr Cys Ser Ser
20

<210> 111
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 111
Thr Glu Cys Arg Gly Ala Ser Ser Gly Ser Val Ser Gly Ala Ala Thr
1 5 10 15

Asp Cys Arg Asp
20

<210> 112
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 112
Thr Leu Cys Pro Pro Ala Ser Met Gly Leu Gly Arg Glu Lys Pro Arg
1 5 10 15

Leu Cys Ser Val
20

<210> 113
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 113
Thr Leu Cys Arg Ser Leu Glu His Glu Val Gly Leu Phe Lys Pro Arg
1 5 10 15

Glu Cys Pro Phe
20

<210> 114

<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 114
Leu Arg Cys Pro Leu Glu Val Asp Arg Pro Asn Arg Asp Pro Ala Phe
1 5 10 15
Leu Cys Ser Gln
20

<210> 115
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 115
Leu Gly Cys Asn Lys Gly Arg Tyr Trp Leu Ser Thr Arg Leu Ser Val
1 5 10 15
Ser Cys Ala Leu
20

<210> 116
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 116
Val Ala Cys Asp Ile Ser Ala Val Glu Arg Leu Pro Ala Ser Ala Arg
1 5 10 15
Ser Cys Lys Thr
20

<210> 117
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 117

Val Val Cys Phe Met Glu Arg Gln Met Gly Thr Asp Val Val Ser Pro
1 5 10 15

Met Cys Val Asn
20

<210> 118

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 118

Val Glu Cys Val Met Ala Ser Ala Ser Thr Asp Gly Thr Ala Ala His
1 5 10 15

Pro Cys Lys Pro
20

<210> 119

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 119

Val Arg Cys Asn Glu Ala Gln Leu Gln Asp Ser Gly Thr Val Pro His
1 5 10 15

Pro Cys Leu Arg
20

<210> 120

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 120

Pro Asn Cys Asp Leu Asp Asp Ile Val Leu Asn Pro Tyr Thr Ala Gly
1 5 10 15

Pro Cys Gly Thr
20

<210> 121
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 121
Pro Asn Cys Tyr Ser Gly Asp Gly Glu Ile Ser Ser His Ile Pro Val
1 5 10 15

Gln Cys Leu Met
20

<210> 122
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 122
Pro Gly Cys Val Val Ser Pro Phe Ala Leu Ser Ala Gln Gly Thr Ser
1 5 10 15

Val Cys Thr Ile
20

<210> 123
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 123
Gly Asp Cys Glu Thr Asn Asn Val Thr Lys Val Gly Gly Ile Thr Arg
1 5 10 15

Asn Cys Val Gly
20

<210> 124
<211> 20

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 124
Gly Tyr Cys Leu Thr Val Val Gly Gly Ala Val Leu Thr Ile Ala Leu
1 5 10 15
Leu Cys Val Thr
20

<210> 125
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 125
Gly Pro Cys Ala Ala Thr Gly Val Asn Pro Gly Asp His Gly Ala Ala
1 5 10 15
Val Cys Asp Gln
20

<210> 126
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 126
Gly Asp Cys Glu Thr Asn Asn Val Thr Lys Val Gly Gly Ile Thr Arg
1 5 10 15
Asn Cys Val Gly
20

<210> 127
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 127

Lys Ser Cys Gly Lys Tyr Gly Leu Ile Val Gly Gln Pro Phe Ala Glu
1 5 10 15

His Cys Pro Pro
20

<210> 128

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 128

Lys Leu Cys Tyr Arg Ser Ser Ala Gly Ser Glu Leu Arg Pro Pro Glu
1 5 10 15

Lys Cys Ala Tyr
20

<210> 129

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 129

Lys Ile Cys Pro Val Thr Asn Met Trp Thr Thr Pro Ser Trp Ala His
1 5 10 15

Lys Cys Gly Met
20

<210> 130

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 130

aggctcgagg atcctcggcc gacggggct

29

<210> 131

<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 131
aggtctagaa ttcgccccag cggcccc

27

<210> 132
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 132
Cys Val Pro Glu Leu Gly His Glu Cys
1 5